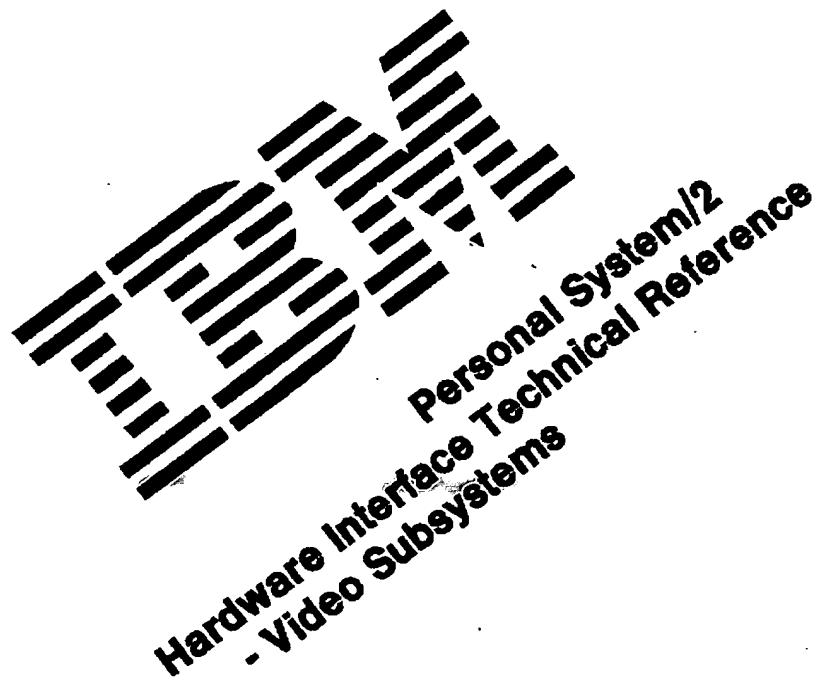


**ATTACHMENT A**



## Contents

<b>Figures</b>	<b>v</b>
<b>Notices</b>	<b>xiii</b>
<b>Trademarks and Service Marks</b>	<b>xiii</b>
<b>Preface</b>	<b>xv</b>
<b>Section 1. Introduction</b>	<b>1-1</b>
Video Subsystem	1-3
Video BIOS	1-4
Type 2 Video Subsystems	1-6
Type 3 Video Subsystems	1-8
<b>Section 2. VGA Function</b>	<b>2-1</b>
VGA Function Introduction	2-5
Major Components	2-7
Hardware Considerations	2-11
Type 1 Subsystem Parameters	2-14
Video Memory Organization	2-23
Registers	2-39
VGA Programming Considerations	2-94
Video Digital-to-Analog Converter	2-101
VGA Video Extensions	2-104
<b>Section 3. XGA Function</b>	<b>3-1</b>
XGA Function Introduction	3-7
VGA Compatibility	3-14
132-Column Text Mode	3-18
Extended Graphics Mode	3-33
XGA Display Controller Registers	3-90
Coprocessor Description	3-128
Coprocessor Registers	3-163
XGA System Interface	3-170
Virtual Memory Description	3-185
XGA Subsystem Identification, Location, and XGA Mode Setting	3-220
VGA Modes	3-227
Programming the XGA Subsystem	3-227
<b>Section 4. Display Connector</b>	<b>4-1</b>
Display Connector Introduction	4-3
<b>Section 5. XGA Sample Code</b>	<b>5-1</b>

---

## VGA Video Extensions

The video extensions provide a means of transferring video information between the base video subsystem and an auxiliary video adapter.

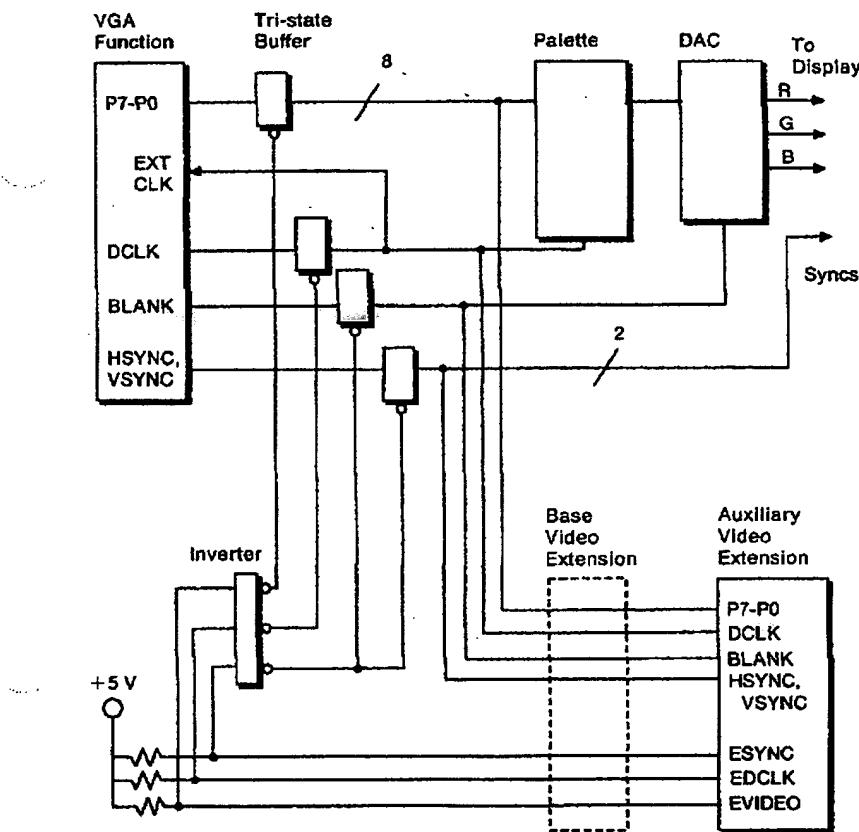
The video extensions consist of:

- The auxiliary video extension
- The base video extension
- The auxiliary video signals

The base video is provided by the video subsystem integrated onto the system board, or, when not provided on the system board, by a suitable video adapter. Such an adapter can provide a Micro Channel connector with the base video extension. Video adapters supporting the base video extension must provide the VGA function as the default. For detailed connector dimensions, see "Micro Channel Adapter Design" in *Personal System/2 Hardware Interface Technical Reference - Architectures*.

The buffers for the base video can be turned off to allow video output from the auxiliary video to be sent through the base video DAC to the display. The video extension can be driven in only one direction at a time.

**Note:** The video extension is only available for use while the video subsystem is in the VGA mode and operating VGA Mode Display Timing Set 1. See "VGA Mode Display Timing" on page 4-5.



*Figure 2-92. Auxiliary Video Connector Interface*

## Display Connector Introduction

The synchronization and monitor ID signals are TTL levels. The video signals are analog signals ranging from 0 to 0.7 volts.

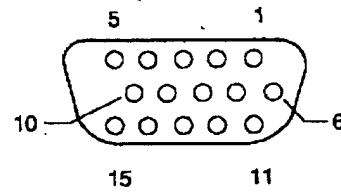


Figure 4-1. Display Connector

Pin	Signal Description	Display Pins	
		Monochrome	Color
1	Red	N/C	Red
2	Green	Mono	Green
3	Blue	N/C	Blue
4	Monitor ID 2		
5	Ground	Self Test	Self Test
6	Red Ground	N/C	Red Ground
7	Green Ground	Mono Ground	Green Ground
8	Blue Ground	N/C	Blue Ground
9	Plug	No Pin	No Pin
10	Ground	Ground	Ground
11	Monitor ID 0		
12	Monitor ID 1		
13	Horizontal Synchronization	Hsync	Hsync
14	Vertical Synchronization	Vsync	Vsync
15	Monitor ID 3		

Figure 4-2. Display Connector Signals